ORGANIZATIONAL STUDY

NATIONAL LIBRARY OF MEDICINE

July 1965

Management Policy Staff
Office of the Surgeon General
Public Health Service

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CONTENTS

		Page
I.	INTRODUCTION	1
II.	INTRAMURAL PROGRAMS	6
	A. Major Inter-divisional Responsibilities	7
	1. Reference Services	7
	2. Subject Cataloging-Indexing	11
	3. Drug Information Responsibilities	13
	4. Systems Evaluation and Development	16
	B. Recommended Division Structure	21
	1. History of Medicine	21
	2. Circulation Services	21
	3. Technical Services	22
	4. Bibliographic Services	23
	5. Information Systems	28
III.	EXTRAMURAL PROGRAMS	29
IV.	EXECUTIVE COORDINATION	33
V.	STAFF SERVICES	35
	A. Publications Management	36
	B. Training	38
	C. Management Services	40
	D. Planning	42
VI.	GUIDING PRINCIPLES	44
VII.	SUMMARY OF RECOMMENDATIONS	46
	Exhibit 1 - Proposed Organizational Chart	48

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I. INTRODUCTION

An organizational and staffing study of the Bibliographic Services Division of NLM was completed in July 1964. Partly as a result of the findings of that study and also as a result of the fast-moving developments in the field of science information and anticipated legislative authority for a drug information activity and a broad-based medical library assistance program, the Director of NLM decided in March 1965 that a broad organization study of the total Library was needed.

This decision came at a really crucial point in the development of the National Library of Medicine and in the redefinition and expansion of its responsibilities to the biomedical community. It was at a point in time only three years after the Library's occupation of its new and modern building in Bethesda; one year and three months after MEDLARS (Medical Analysis and Retrieval System) was placed in full operation; less than one year after the first automated production of Index Medicus via GRACE (Graphic Arts Composing Equipment); and only fifteen months after the entry on duty of the present Director of the Library.

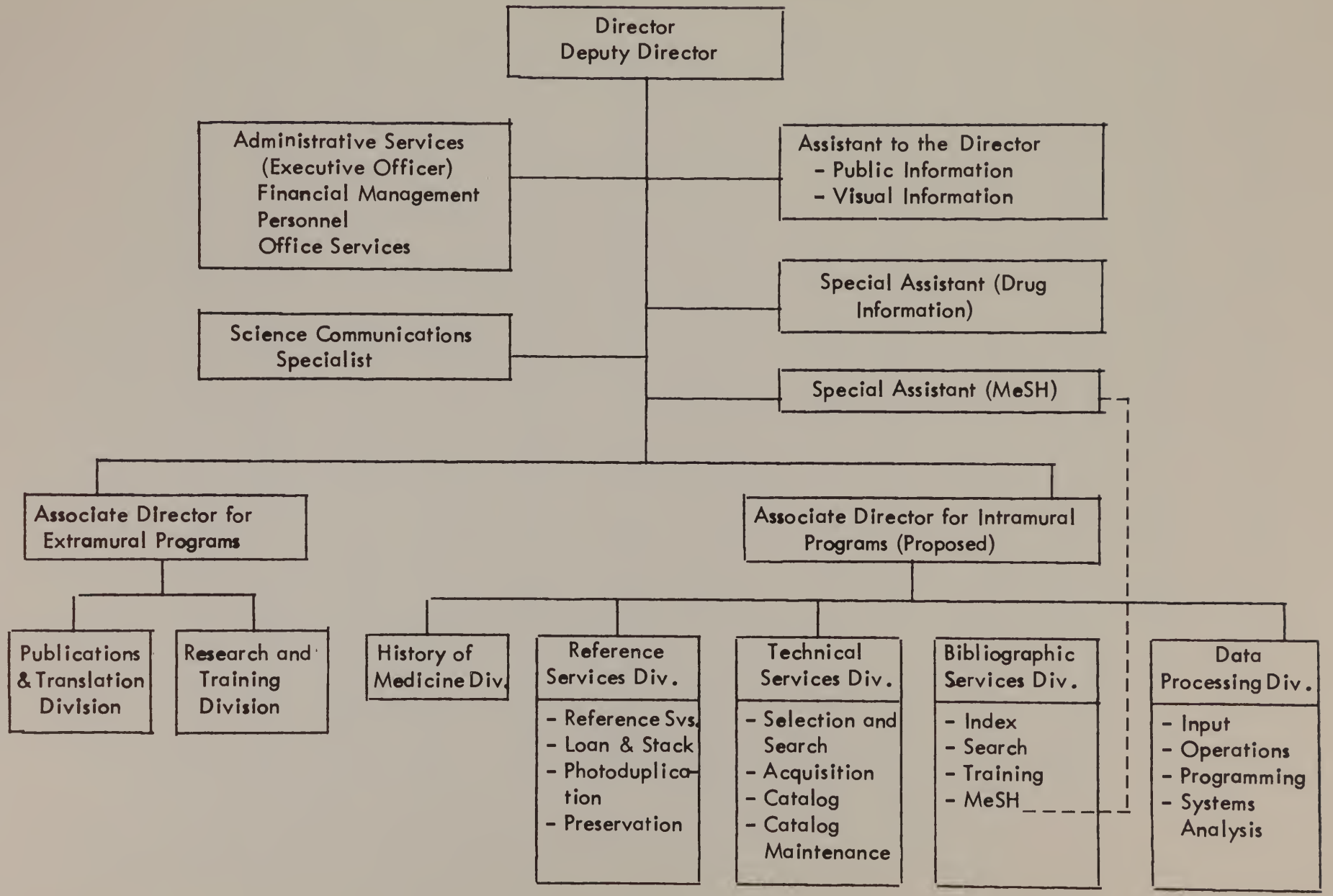
At this time only one regional MEDLARS center was fully operational, one was in the programming phase, and the full development of a network of centers was only a long-range plan. At this time the total NLM budget was just under $4 million (including grants and contracts) and the Library was operating with a staff of 275 persons. Long range plans projected for FY 1970 a budget of $32.6 million and 454 positions.

The programs of the Library are presently carried out through five intramural divisions, two extramural divisions (coordinated by an Associate Director for Extramural Programs), and a number of staff offices and assistants. (The title "division" is used at NLM to designate an organizational level equivalent to "branches" elsewhere in the Department. This is to avoid confusion with traditional library usage which reserves the term "branch" to designate a branch library, or a geographically separate facility.) The current organizational framework of NLM is depicted in chart form on the following page.

This organization reflects some minor adjustments made in recent years to accommodate MEDLARS and the expanding computer operations. The principal change had been the establishment, first, of the data processing function as a section in the Bibliographic Services Division and later its enlargement to division status as the Data Processing Division.

In view of the program changes to date and particularly because of the anticipated future developments, the Director expressed his desire that the existing organization be evaluated in terms of its adequacy for present operations and its potentiality for growth and expansion to meet future responsibilities. He also expressed a hope that the organization could be streamlined and tightened, both to make it more efficient and responsive and to lessen the number of officials reporting to the Director.

NATIONAL LIBRARY OF MEDICINE - CURRENT ORGANIZATION
AND AUTHORIZED POSITIONS - JUNE 30, 1965



At the request of NLM, a member of the Management Policy Staff, OSG, was assigned to make an organizational study of the total Library. This report is the result of that study which was carried out between April 15 and June 30, 1965. It consists almost exclusively of recommendations on organization, together with appropriate discussions of the rationale for the various proposals presented. With one or two exceptions, procedural matters have been the subject of neither detailed analysis nor recommendations. This is because the priority needs of NLM are in the area of organization, not procedures, and because NLM can provide competence on systems analysis and procedural studies from its own staff.

This Report has made no attempt to develop a detailed statement of staffing requirements for the Library's expanding programs. NLM has regularly collected a large quantity of good production data which, when properly analyzed and interpreted, can be effectively used to support its future staffing and budgetary needs. This is seen as a continuing responsibility of the Library's Executive Officer, given adequate staff assistance to discharge it properly.

This Report does not presume to recommend the future program and policy objectives of the Library, although the writer is not unaware of the growing national interest in science communication and the challenging opportunity that NLM may have to play a key role in its development. The major contribution which this Report can make is to recommend an organizational pattern with

flexibility for growth and expansion, with a prominent place for research and evaluation, and an organization which, while responsive to the policies of its director, will not stifle individual imagination and ingenuity.

It is not expected that the proposed organization either can or should be installed immediately as a completed package. Some changes will require personnel adjustments, reassignments, or the recruitment of just the right person. Other changes must await more nearly adequate budgetary support. It must be the responsibility of the Library to determine the proper direction and speed for implementation of the proposed organization.

II. INTRAMURAL PROGRAMS

At present, the intramural programs of the Library are carried out through five divisions: History of Medicine, Reference Services, Technical Services, Bibliographic Services, and Data Processing. Any attempt to evaluate the effectiveness of this organizational structure must take into account (1) the organizational impact of the computer-based MEDLARS system, (2) the resulting pressure on indexing and the demand search function, (3) the need for a continuing re-evaluation of the system and especially of the index structure on which it is based, (4) the growing needs of the regional MEDLARS centers, and (5) the expected Congressional mandate to mount a $1 million drug information program. The suggested organization should be such as to not only permit but encourage maximum internal efficiency, and to also allow for the automation of additional library functions.

In developing an organizational pattern for the intramural program activities, it was first necessary to examine in some detail several functions which apparently overlap current division assignments. The more important of these are: reference services, subject cataloging-indexing, the drug information program, systems evaluation, and Regional MEDLARS Centers.

A. Major Inter-divisional Responsibilities

1. Reference Services

Two divisions of the Library are currently engaged in providing significant reference service to the public. In both cases the service consists principally of bibliographic citations submitted in response to a formal inquiry. The Reference Services Division (RSD) through its Reference Section is providing a conventional, library-type reference service on request. The Bibliographic Services Division (BSD) through its Search Unit is providing bibliographies in answer to specific inquiries. These bibliographies are in the form of computer print-outs produced as a result of "demand search" formulations prepared by the Search Unit.

The present division of responsibilities gives rise to a number of problems.

a. There is no responsible official regularly charged with deciding whether an inquiry will be answered by demand search or by conventional reference service. The Mail Room makes the assignment if the inquirer addresses a specific division, section, or person or if the words "demand search," "MEDLARS" or other obvious indicators are used. If one Division receives an inquiry which it believes should go to the other, an informal transfer occurs.

b. There are a number of inquiries which can best be answered by both a demand search and conventional reference assistance. At present,

this can only be accomplished as an inter-divisional cooperative project between the Reference Services Section of RSD and the Search Unit of BSD.

c. To continue separate organizational units providing reference services will make necessary the development of subject-matter specialists in each such unit. With the current shortage of qualified personnel in the highly specialized fields of the biomedical sciences, NLM can ill afford the luxury of any duplicate specialization.

d. It is the belief of the writer that the result ot computer-produced demand searches by BSD will need a critical review and editing before release to the public, both to edit out non-responsive items as well as to add pertinent citations which either were not in MEDLARS or were not identified by the search formulation. The subject-matter reference librarians should be well qualified to provide a useful service in this regard.

The problems inherent in separating the reference services on the basis of the means used in their execution have been recognized by NLM officials who fully appreciate the interrelationships of the activities involved. It has been announced that the Search Unit of BSD will eventually be transferred to RSD and integrated with the Reference Services provided by that Division.

This solution would have the disadvantage of separating the Search Unit from the Indexing Unit and from the Medical Subject Headings (MeSH) group.

These interrelationships are, and need to be, very close. Search Unit personnel are all trained indexers who must be fully aware not only of general indexing policy but also of current practice and of every change in this practice. The Chief of the Bibliographic Services Division and others in the Library consider that regular job rotation between the two units would be a highly desirable means of keeping each aware of the needs of the other. The Search Unit and the Index Unit are also the principal sources of proposals for additions to and deletions from MeSH and are obviously the principal users of the headings.

Since the search function needs to be more closely related to the traditional reference function and cannot be separated from indexing and MeSH without lessening its effectiveness, an alternate solution is to consider a major rearrangement of NLM functions which would move most of the Reference Services Section to the Division in which the Search Unit is located instead of transferring the Search Unit from its present location.

It is recommended that the bibliographic reference function now in RSD, exclusive of the "Ready Reference" service, be transferred to an expanded Bibliographic Services Division and joined with the present Search Unit to form a Reference Section.

This would obviously change the scope and mission of the present RSD, and an examination of the current functions of that Division would be helpful in this consideration.

The Reference Services Division, as presently constituted, is the largest division in the Library (73 employees) with a rather wide range of basic library functions divided among the four sections listed below.

The Loan and Stack Section, staffed mainly by sub-professionals, maintains the stacks, shelves books, locates and pulls books to fill orders both for readers in the Library and for interlibrary loans.

The Photoduplication Section, staffed mainly by sub-professionals and machine operators, does photoduplication for interlibrary loans, microfilming of items for preservation, and provides other special photographic services for the Library.

The Preservation Section, also staffed by sub-professionals, is responsible for bindery work, labeling of books, identification and collating of "poor paper" items for microfilming, and the maintenance of microfilm files.

The Reference Section has a dual function. On the one hand, it operates the Reader Service Desk, supervises the reading room, and answers short and relatively simple inquiries from the readers. On the other hand, through the Reference Section composed of subject matter specialists and more highly trained reference librarians, it performs bibliographic research in order to answer the more complex requests for information, which may arrive by letter, telephone, or by personal inquiry.

With the removal of this latter function, the Division would remain responsible for four basic activities which would fit together very well. These would be Readers Service Desk, Loan and Stack, Photoduplication, and Preservation. The Readers Service Desk would include the "Ready Reference" service and would need to be backed up by professional librarians to handle the number of miscellaneous and relatively non-complex inquiries from the public. With this major change in function, the Division's responsibilities would be more nearly in the field of circulation -- both for interlibrary loans and for its readers.

It is, therefore, recommended that the title "Circulation Services Division" be adopted to more accurately describe the revised functions and responsibilities.

2. Subject Cataloging-Indexing

The Index Unit in BSD indexes (assigns subject headings to) all articles appearing in some 2400 substantive biomedical journals. The Catalog Section in the Technical Services Division (TSD) assigns subject headings to books and monographs received at NLM as a part of the cataloging process. The subject headings used in both cases are those officially recognized in MeSH.

Superficially, it would appear that the intellectual processes are similar, that the product is essentially the same, and that there might be reasons for a merger of the two activities. There are, however, significant differences.

The Index Unit is composed of subject matter specialists; it does a much more intensive subject analysis, and its work is limited to substantive journal literature whose subject content is worthy of inclusion in MEDLARS and Index Medicus. The subject cataloging function encompasses much literature that does not warrant intensive analysis or inclusion in MEDLARS. Subject cataloging is done by the same personnel who do the basic descriptive cataloging and may be considered as almost a by-product of the descriptive cataloging function. For this reason, no economy could be achieved by wholesale transfer of subject cataloging to the Index Unit.

On the other hand, there is a recognized need for an early expansion of the MEDLARS system to include the more significant monograph literature. When such an expansion is effected, it is recommended that the indexing function for this segment of the work be assigned to the Index Unit which can bring to it the same kind of subject competence that is now used in indexing the journal literature.

Under this proposal, the Cataloging Section would continue to do subject cataloging for the bulk of the titles received, but would select out (on the basis of established standards) the monographs to be indexed into MEDLARS and forward these to the Index Unit after descriptive cataloging is completed. Obviously, such a substantial addition to the workload of the Index Unit cannot be contemplated until after that unit is adequately staffed to carry its current workload and the anticipated increase.

3. Drug Information Responsibilities

The most important challenge facing NLM today is the expected assignment to it of responsibility for an intensive effort in indexing, organizing, and disseminating information on drugs contained in biomedical and related literature. This activity will be based on the MEDLARS capacity but will impose upon it additional requirements which cannot be accurately foreseen until the systems development phase is accomplished. It is expected that the large number and complexity of additional subject headings needed for extreme depth-indexing of drug-related literature will require a subject heading list separate from MeSH and a dictionary tape separate from the present MEDLARS dictionary tape. A major problem, whose complete resolution may be years in the future, is that of designing a system for classifying and recording chemical structure of drugs. The Library obviously cannot wait for a resolution of all these problems, but must show some concrete and tangible results from the drug information activity early in fiscal year 1966. Fortunately, much information on drugs has already been entered into the MEDLARS system through the process of indexing the principal biomedical journals. A start can thus be made on special searches and special recurring bibliographies by using the material already at hand.

In view of the priorities and emphasis which this program will receive nationally, it is important that NLM make maximum and efficient use of its

available resources, wherever located, to produce prompt and meaningful results. It is important that there be established an organizational focal point for program planning, leadership, and external relations, but it is equally important that this organizational unit not duplicate resources and services available elsewhere in the Library.

To illustrate with specifics:

a. The Chief of the Drug Program should decide what drug literature should be added to the NLM collection; it should be the responsibility of TSD to acquire the material, record its receipt, and catalog it.

b. The Chief of the Drug Program must be responsible for program planning and development; but the Data Processing Division will have to advise on computer capabilities, carry out the systems design work, programing, and computer operations.

c. The Chief of the Drug Program should provide leadership in planning the indexing system to be used; the actual indexing should be accomplished by supplementing the resources of the present BSD Index Unit, not in establishing a separate indexing unit.

In view of the possibly controversial nature of the last illustration, it may be appropriate to explain the reasoning behind it. It has been estimated that fifty percent of the biomedical literature now being indexed contains references to drugs. Biomedical literature and drug literature are not separate entities;

most journals cannot be conveniently classified as the one or the other. Hence, a separate drug indexing group would probably find itself performing an essentially duplicate review of a large part of the 2400 journals now being indexed to be sure that no articles relating to drugs were missed. Secondly, if the 50 percent of the articles which relate to drugs were reindexed in more depth, considerable duplication and waste of effort would occur. If in some cases, the original indexing was corrected or changed, it is obvious that personnel clashes between the two indexing groups could soon develop into a serious morale problem. A time when the Library is faced with an indexing backlog approaching 40,000 articles is no time for indulging in the luxury of duplicate indexing of even a small part of the literature.

In contrast to the indexing function, the search function would appear to be perfectly capable of being divided between searches directed primarily toward drugs (their composition, dosages, uses, reaction, etc.) and all other biomedical search requests. In fact, there would be several advantages to encouraging the Drug Information Program to assume increasing responsibility for formulating demand searches in its area of special interest. This activity would provide first hand knowledge of the capacity and the limitations of the present MEDLARS system for providing useful information on drugs. It would provide valuable experience on how best to extract that material from the system and it would provide a practical basis for use in designing a better system. Also it would tend to bring the NLM Drug Information Program into closer contact with the principal users of its product, with resulting benefits for both parties.

To establish the Drug Information program as a section in BSD would encourage and facilitate cooperation between Index, Search, and MeSH staffs and would also make possible the desirable rotation of personnel between the Search and Index functions.

In view of the close interrelationships which the Drug Information Program must establish and maintain with all parts of BSD, it is recommended that it be established as a section in an expanded Bibliographic Services Division. It is further recommended that the BSD indexing function be strengthened and expanded to make possible this broader and deeper indexing effort on drug-related literature.

Future expansion and development of the indexing group should see a move toward more formal and definite specialization in a number of areas. Drugs (or Pharmacology), Biochemistry, Bacteriology, General Medicine, Surgery, Psychiatry and Psychology, Physiology, Physics and Environmental Health are some areas in which increased specialization may well occur.

4. Systems Evaluation and Development

The development and effective implementation of the MEDLARS system has given NLM a position of leadership in the library community. NLM is justly proud of this accomplishment. Nevertheless, the application of modern scientific techniques to the storage, retrieval, and dissemination of science information is in its earliest stages of development. To rest content on past accomplishments is the surest way to lose a position of leadership. This means that the Library must constantly evaluate its present system and energetically look for new and even radical means of improving and expanding its services to the scientific community.

Efforts during the last year to evaluate the MEDLARS system have not produced meaningful results. NLM officials have frankly recognized this and have made two moves which show great promise of leading toward a truly effective evaluation and developmental operation. First is the proposal to establish an Information Systems Division with a continuing responsibility for research, development, and evaluation. Second is the proposed Cleverdon Project, financed by the National Science Foundation, which involves a contract with a recognized authority in the field of science communication to conduct a thorough-going, comprehensive evaluation of MEDLARS.

It is the conviction of the writer that NLM computer capabilities have now achieved a stage of development and a level of sophistication far beyond that achieved by its indexing system and that it is the intellectual input phase that needs maximum attention. The present MeSH is not much more than an expansion of the subject headings used in the old manual system.

There is no agreement in the field of science information as to what is the best system of indexing. Authorities can be cited to support almost any known system. The arguments go on at length on the relative merits of established headings or "natural language" indexing; whether to use subheadings or "pre-coordinated" terms; on the value of "depth" versus "non-depth" indexing; and even on what depth-indexing is. Other issues involve the importance of abstracts in indexing; the desirability of entering an entire abstract into the system, the value of title indexing, and the "key-word-in-context" concept. There are undoubtedly a host of other indexing concepts all with equally eloquent proponents.

It is not the intention of the writer to set himself up as an authority and make a final resolution of the complex issues involved in the indexing of medical literature. It is appropriate to recommend, however, that NLM keep a completely open mind on indexing, maintain as flexible a system as possible, subject its operations to a continuing critical evaluation, and be prepared to test and evaluate proposed new concepts which show potential merit.

It is necessary that NLM make adequate provision for support of Regional MEDLARS Centers. One such center is in full operation at present; one is in the programing stage; many others will be added in the years to come. Although the complete range of their needs for administrative and program support can only be determined by experience, it is essential that the Library establish a single organizational unit with responsibility for these centers. The Library will need to (1) review a request for establishment of a Regional MEDLARS Center to determine library, personnel, and computer resources available; (2) assist, either directly or on contract, in systems planning and programing; (3) provide basic MEDLARS tapes and arrange for continuous up-dating; (4) provide instructions on indexing and searching and arrange for up-dating of all manuals and instructional materials, including provisional entries and deletions in MeSH, (5) recommend Federal financial support as appropriate; and (6) evaluate operations and provide assistance in problem solving. Since these continuing needs for assistance and support will involve both BSD and the proposed Information Systems Division, there are three possible locations for the assignment of this responsibility. These are: the Informations Systems Division, the Bibliographic Services Division, or a

newly established staff office reporting to the Director. The third choice, an additional staff office, was rejected in order to restrict the number of staff offices reporting to the Director and because it did not seem that this would appreciably lessen the inter-divisional relationships involved.

It is recommended that the responsibility for regional MEDLARS centers be assigned to a separate section in the Informations Systems Division.

It is recognized that there also will be important needs in the area of training and orientation for center personnel in indexing, search, and computer operations. It is believed that this phase of the responsibility can be effectively carried by the proposed NLM training officer in cooperation with operating staff of the Library.

Improvement of the existing MEDLARS system and research and development in the field of indexing scientific literature are not the only areas in which improvements can be and are being made. Within the last year, NLM has undertaken and carried to substantial completion a project looking toward the automation of almost all routine work in the Technical Services Division (TSD). The first part of this project (to be implemented in January 1966) will result in an automated catalog. It is hard to overestimate the value of this development. For the medical library community, it will provide a computer-produced biweekly list of acquisitions for their guide to procurement and cataloging. These listings can be cumulated quarterly, annually, or at five-year intervals. For NLM this will make possible the elimination of the routine typing and clerical operations of the Catalog Maintenance Section. Eventually, it will produce even larger savings with an automated catalog searching capability. This will be of value to the Selection

Section in determining whether an item being considered for acquisition is already in the Library, and to the Catalog Section in reducing the time spent in search and verification of previous entries used for authors, titles, and cross references.

The subsequent automation of the acquisition process will make possible the more accurate recording of obligations for book procurement, the determination at any time of the precise status of funds obligated, and the more effective follow-up on unreceived items. Automation of the Serial Record will eliminate a large amount of clerical drudgery and make for far more accurate recording of journal receipts.

Another very important developmental area is the joint study with the National Bureau of Standards to explore the feasibility of a microimage storage and retrieval system. A successful "break through" in this undertaking could have far-reaching effects on storage of library materials, interlibrary loan operations, and information retrieval.

All of this indicates that NLM is not resting on its laurels but is moving forward with both energy and enthusiasm to develop better systems of information handling.

In order to continue effective progress in this direction, it is recommended that NLM implement its proposal to establish an Information Systems Division and that it be organized in three Sections: (1) Research, Development, and Evaluation, (2) Computer operations, and (3) Regional MEDLARS Centers.

B. Recommended Division Structure

The preceding sections of this Report have contained discussions and recommendations relative to certain important inter-divisional problems. This section will attempt to summarize for each proposed new division its major sections and functions -- both those that have been the subject of previous recommendations and those that have not yet been discussed.

1. History of Medicine Division. This Division is responsible for the collecting, cataloging, and maintenance of books and photographs on the history of medicine and for the Library's historical sources material. (This is defined, in general, as books printed prior to 1801 except for certain Americana for which later dates have been established.) The Division also produces and publishes bibliographical studies and guides to scholarship in its area of interest.

This Division, except for making use of TSD services for the purchase of books and securing photographic and housekeeping services elsewhere, has minimal needs for interrelationships with other parts of the Library. It is a relatively small division which has not felt the need for any formal organizational structure below the division level.

It is recommended that the History of Medicine Division be continued with no change in function or organization.

2. Circulation Services Division. This is a proposed new division, grouping the major functions of the former Reference Services Division except for its

bibliographic reference services. The sectional subdivision would be as follows:

Readers Service Desk
(Including the "Ready Reference" Service)

Loan and Stack Section

Photoduplication Section

Preservation Section

Any major development in the Graphic Image Storage and Retrieval Project would undoubtedly have considerable impact on the functions, and probably on the organization, of this division. The results of this project, however, cannot be foreseen with sufficient clarity at present to serve as a basis for formulating organizational recommendations.

3. Technical Services Division. Mention has been made earlier of the plan for automation of the work of this division. The automated system, when fully developed and installed, will have a major effect on the functions and kind of work performed, but it will not necessitate major organization changes except for eliminating the need for a separate Catalog Maintenance Section. Eventually the Division will be composed of three sections:

Selection Section

Acquisition Section

Catalog Section

Recently, the Technical Services Division has added to its staff an Assistant to the Chief. This is a medical officer who will assist in the establishment and execution of policies governing the scope of the NLM collection. The up-dating and formal recording of an NLM scope-of-collection policy is badly needed. In addition to a continually expanding concept of the field of biomedicine, there is a need for the Library to place a wider emphasis on public health -- especially the environmental health sciences and the behavioral sciences.

4. Bibliographic Services Division.

a. Organization:

Only in name does this proposed Division resemble its predecessor. Functions which have been recommended for transfer into this Division are: conventional search (from RDS), the Drug Information activity, and full responsibility for the Medical Subject Headings (see page 35). In addition to these accretions, there will be significant expansions of existing program activities.

The four Sections recommended are:

MeSH Section

Drug Information Section

Index Section

Reference Section (Including conventional search, demand search, and recurring bibliography)

With its responsibility for developing the index system to be used, indexing, developing a drug information program, and performing reference services both via MEDLARS and by conventional means, the proposed Bibliographic Services Division will be a major key to the Library's effectiveness in the future and its reputation in the scientific community. It is essential that it possess bold, imaginative, and capable leadership and a supporting staff adequate for the job which needs to be done.

b. Index Section Staffing:

At present, the Index Unit of BSD is drastically understaffed for the job that is facing it. In the last year, in spite of large amounts of overtime, the actual backlog of articles in the Unit waiting indexing has more than doubled -- from 11,860 on May 30, 1964, to 24,960 on May 30, 1965. The production rate has not changed significantly during this year, and with the increasing emphasis on depth-indexing it is not realistic to expect any appreciable production increases. Some procedural improvements, which will be mentioned later, can effect a slight gain in effectiveness, but the only permanent solution is a sizeable increase in staff. Because of the need for extensive training of new personnel, the effect of even an immediate increase will not be noticeable for several months. A backlog of the proportions now existing has an obvious effect on the currency and value of Index Medicus. However, the writer is even more concerned that the pressure of this backlog combined with increasing emphasis on numerical production

goals may cause a very real, but difficult to measure, decline in quality of the indexing work.

An analysis of the production records maintained by the Index Unit indicates that during the last year the Unit indexed 152,000 articles with a staff that averaged 18.5 [1/] full-time indexers and revisers. At this rate, one person would be needed for each 8,000 articles to be indexed.

It is believed that these annual production figures are far more meaningful than hourly rates. This is because hourly rates are based on actual time spent in indexing and do not take into account the large amount of time spent on non-indexing tasks such as training of new personnel, attendance at meetings, discussion of proposed MeSH terms, preparation of dictionary file cards, and preparation of Occupational Health abstracts.

It is recommended that the staff available for indexing be increased to at least one person for each 8,000 articles to be indexed annually, exclusive of additional personnel needed for depth-indexing of drug-related literature.

It is recognized that current limited resources available to NLM forces its Director to make very difficult judgments between competing program needs. The writer was impressed by the fact that the Library is devoting about the same number of man years to cataloging 15,000 items per year as it is to indexing over 150,000 articles per year. It is believed that the indexing function is sufficiently important to warrant a much greater share of the Library resources.

1/ This figure was computed by excluding from the personnel count the Chief of Index Unit, the two members of the training staff, and personnel spending less than 70 hours per month indexing, but adding to the total an estimated one man-year of overtime work.

c. Index Section Procedures:

There are a few procedural improvements which, while not revolutionizing the efficiency of the unit, should contribute toward lightening the heavy load of routine work now carried on by the Chief of the Index Unit and his immediate office.

(1) Although NLM is only indexing 2400 journals, all journals received (about 15,000 titles per year) have been regularly routed to the Index Unit where its Chief and one other person have glanced through every journal not being indexed to locate review articles for indexing and inclusion in the publication, "Bibliography of Medical Reviews." The Chief of the Division has recently determined that the number of articles being located in this process (240 last year) are too few to warrant the extra work involved. He has decided, therefore, to eliminate this time-consuming review function.

(2) The Chief of the Index Unit personally assigns each journal issue to an indexer based on the indexer's experience, training, subject area of specialty, and language competence. The indexers return completed work to the Chief who reviews the work, records production statistics, and assigns the journal to a reviser. Revisers return their work to Chief who reviews the work, records production data, and forwards to Data Processing Division. This means that the Chief of the Unit physically handles each issue a minimum of three times and spends some of his valuable time in clerical record keeping. It is recommended that each journal be assigned on a continuing basis to an indexer

or to an indexing group (one reviser and several indexers); that the Unit Secretary route the journals accordingly; that completed index work be submitted to the reviser who would revise and then submit to the Chief for final review; and that production statistics be kept by each indexer or reviser and summarized by the Secretary of the Unit.

This procedure would have several advantages. The Chief of the Unit would handle each journal only once instead of three times and would also be relieved of clerical record keeping. He would have more time for a professional review of the quality of indexing. This procedure would also strengthen the role of the revisers and encourage them to be real supervisors with responsibility for assignment of work, quality of indexing, and maintenance of production standards. There would also be some advantages in having the same indexer review the same journal each time. This does not mean that assignemtns could not be changed frequently to adjust for increased experience of an indexer, backlogs in certain areas, extended absences of personnel, etc.

This suggested procedure has been discussed with the Division Chief and the Chief of the Unit and it is understood that they will put it into effect. It is quite likely that this will require an additional clerical position in the Office of the Chief of the Unit, but if this can lessen the demand on professional time, it is well worth the cost.

(3) During the last month, the Chief of BSD discovered that some 400 journals listed for inclusion in the Index Medicus had never been received in the Division. To guard against a repetition of this mistake, it was decided to note in a card file the receipt of every journal received in the Index Unit. This duplicates,

in effect, the Serial Record file maintained by TSD, and, to some extent, a computer record built into the MEDLARS system.

It is recommended that this duplicate record not be established and that instead the Library rely on the Serial Record file maintained by TSD and the computer control of overdue issues.

5. Information Systems Division. As previously indicated, this proposed Division will consist of three sections:

Research, Development and Evaluation

Computer Operations

Regional MEDLARS Centers

The Research, Development and Evaluation Section will be responsible for the evaluation and application to the Library needs of new developments in information storage and retrieval systems. It will also carry responsiblilty for continual evaluation and redesign of existing Library information systems. Most of this work will be accomplished with "in-house" capability, but some of it may be carried out through contracts.

The Computer Operations Section will include programing and systems application, maintenance of existing computer programs, and operation of all data processing equipment.

The Regional MEDLARS Centers Section will evaluate the resources available to the proposed centers, assist in their development, and coordinate the provision of NLM support to each of the regional MEDLARS centers.

III. EXTRAMURAL PROGRAMS

The extramural 1/ activities of the National Library of Medicine are in a developmental and planning stage. The two existing divisions -- Publications and Translations, and Research and Training -- were established only last year with skeleton staffs.

The Publication and Translation Division is carrying out a program of contract support for biomedical publications and translations which had earlier been transferred to NLM from the National Institute of General Medical Sciences. The division of responsibility involves NLM support of so-called secondary publications -- abstracts, critical reviews and bibliographies; and NIH support of the publication of basic research findings. This division of responsibility is in theory only; in actual practice NLM, because of fund limitations, provides only a minor portion of the PHS support for secondary publications and NIH is continuing to play a very active role in this field.

The only coordinating mechanism now in existence is the PHS Advisory Committee on Scientific Publications, with the Chief of the NLM Publications and Translations Division serving as its Executive Secretary. There is some doubt that an external advisory committee is an adequate mechanism for establishment and coordination of PHS policy on support of abstracts and other secondary publications. It is believed that the Public Health Service should seriously consider assigning to NLM a stronger role in the development and implementation

1/ The term "extramural" as used at NLM and in this paper encompasses both grants and contract supported activities.

of a PHS-wide policy on support of secondary publications. Eventually, this might well lead also to the development of a computer-based clearinghouse for the interchange of abstracts information in the biomedical sciences.

The Research and Training Division is administering a small research grants program, currently limited to projects in the history of medicine field. Considerable effort has been expended recently in assembling and analyzing data on the deficiencies and basic needs of the nation's biomedical libraries. The results of this study have been used in Congressional hearings in support of the proposed "Medical Library Assistance Act of 1965."

This Medical Library Assistance Act, when passed, will provide a clear and specific base for a broad extramural support program to expand and develop the country's medical libraries. As currently written, it authorizes the following grant programs, with fiscal limits as indicated.

1. Assistance for construction of facilities - $10 million
   - A matching grant with the Federal share not to exceed 75%
   - Available for construction, remodeling and equipment costs (including automatic data processing equipment, but not for purchase of books, pamphlets and related material)
2. Grants for training - $1 million
   - Grants to individuals
   - Grants to universities or to libraries to develop and expand training activities
3. Scientific Project Grants - $.5 million
   - Fellowships to physicians and scientists for compilations and writings, such as bibliographic studies, reviews, abstracts, etc.

4. Research and Development Grants - $3 million

   - Research grants or contracts in medical library science and related activities

5. Grants for expanding and improving medical library resources - $3 million

   - A matching grant with a declining Federal share over a 5-year period

   - Available for basic operating costs such as purchase of books, cataloging and binding, duplication equipment, etc.

6. Grants for Regional Medical Libraries - $2.5 million

   - A matching grant with a Federal share not to exceed 50%

   - May be used for essentially all operating costs of a Library

7. Financial support of biomedical publications - $1.5 million

   - Grants or contracts for compilation, writing, and publication of reviews, abstracts, indices, bibliographies, etc.

In the management of these grant and contract responsibilities, NLM wisely plans to make maximum use of grants management, contracting, and fiscal accounting resources and competencies available elsewhere in PHS. It will reserve to itself matters of policy development and interpretation, program promotion, professional review of applications, and relationships with external advisory committees and councils. To discharge effectively these responsibilities for the seven grant programs authorized by the proposed legislation with a maximum fund authorization in excess of $20 million, will obviously impose an enormous administrative and program responsibility upon the resources of NLM. Major staff additions will be necessary in the extramural area of activity.

Inquiries among a number of Research Grant Branches elsewhere within the Public Health Service revealed, however, that there is no commonly accepted pattern of organization to discharge research grant responsibilities and that no staffing guides or standards have been developed. Every Branch contacted had its own unique organization and staffing pattern. Therefore, no satisfactory base could be established for projecting personnel staffing needs.

On the other hand, the major grant and contract programs authorized by the proposed Medical Library Assistance Act do seem to lend themselves to a three-way grouping which may be useful in a future division of responsibility within the Library's Extramural Program area. The three broad classifications are:

1. Research and Training

2. Library facilities and resources

   Construction Grants
   Grants for expanding and improving basic library resources
   Grants for establishment of regional libraries

3. Publications

   Financial support of biomedical publications
   Special scientific project grants

It is recommended that NLM consider the eventual establishment of a three-division structure within the Extramural Program area to consist of a Research and Training Grants Division, a Library Resources Division, and a Publication Support Division. The Publications Support Division would include the present program for the support of translations, but it is believed that the term "publications" is broad enough to encompass translations as one form of publication.

IV. EXECUTIVE COORDINATION

The expanding responsibilities recently assumed by NLM and the even broader responsibilities envisaged for the future in extramural activities, a drug information program, regional MEDLARS centers, and the broad field of biomedical science information exchange impose problems of long range planning, program development and direction, organizational expansion, and inter-divisional coordination that are beyond the capacity of present staff to manage.

A first step in the direction of expanding top management to meet these and other challenges has already been taken with the establishment and filling of the position of Associate Director for Extramural Program at a GS-16 level.

There are even more urgent needs for program coordination in the intramural area. A functional organization, such as that recommended for NLM, makes possible a very efficient use of specialized personnel, but it imposes a greater need for effective coordination on a day-to-day basis.

It is recommended, therefore, that the Library establish a position of Associate Director for Intramural Programs to direct and coordinate the work of the five intramural divisions and to participate actively in program planning and direction. In order for this position to function effectively, it is imperative that the person selected for it be an individual with proven managerial competence, that he be given a full delegation of authority from the Director to direct the intramural programs of the Library, and that he be fully recognized as the official channel

both for orders to the divisions and for information and reports from them. Only in this way can he effectively discharge his broad responsibilities and be held fully accountable for results.

V. STAFF SERVICES

It is important that a clear distinction be made between line and staff responsibilities and that the chiefs of the operating divisions of the Library be given authority commensurate with their responsibilities. Only in this way can they be held fully accountable for results.

In the NLM organization there are currently staff assistants to the Director whose functions impinge, to some extent, upon responsibilities which should be exercised at the division level. On the other hand, there are library-wide staff functions for which adequate provisions have not yet been made.

In order to clarify and make more effective the line-staff relationships within NLM, it will first be necessary to eliminate two positions now reporting directly to the Director and to transfer their responsibilities to line programs.

The position of Science Communications Specialist (GS-15) should be abolished. Its basic responsibilities will be absorbed by the Research, Development and Evaluation Section of the Information Systems Division. This expanded role for the Information Systems Division has already been foreseen by the Director and was outlined in his memorandum of May 13, 1965, to the Surgeon General.

The position of Special Assistant which now carries responsibility for directing the development of Medical Subject Headings should be abolished and its responsibilities transferred to the MeSH Section of an expanded Bibliographic Services Division. This would place the Chief of the MeSH group in the same

Division as the personnel whose work he supervises. It would also place the group in organizational proximity to the indexing and searching functions which originate most of the proposals for changes in MeSH. (It is recognized that the cataloging activity in the Technical Services Division also uses these subject headings but its impact upon MeSH is of a completely different order of intensity.)

Among those staff services which need either strengthening or reorganizing are: Publications Management, Training, certain aspects of Management Services, and Planning.

A. Publications Management

This is an area for which adequate staff provision has not been made. Almost every division of the Library produces publications of importance to medical libraries and to the biomedical community. There is, however, no coordinated publications program for the total Library. There has been no organized method of determining what publications are needed, what audiences should be reached, or what distribution policies should be adopted. Each division has had to assume responsibility for editorial work, proofreading, negotiation of necessary clearances, printing and distribution. These weaknesses have been clearly recognized by the Director who has taken steps to employ a publications officer for the Library.

It is recommended that a Publications Management Unit be established with the following functions:

1. Guide the development of a total NLM publications management program by:
   (a) Evaluating usefulness to the biomedical and library community of current publications.
   (b) Identifying unmet needs.
   (c) Reviewing proposals for additional publications.
   (d) Making appropriate recommendations to the NLM Publications Committee and to the Director.
2. Determine the audience for each publication, develop and maintain distribution lists, and supervise all mailings.
3. Review each publication for consistency with established style and for editorial appropriateness to audience addressed, and proofread for accuracy of typing, spelling, punctuation, grammar, etc. (Technical and scientific content is the responsibility of the division or office producing the publication.)
4. Make all arrangements for publication including the securing of approvals (when needed) of BOB, PHS, Joint Committee on Printing, etc., and negotiate with GPO or commercial printer as appropriate.
5. Establish time schedule for each step in the publication process and see that the schedule is met.
6. Recommend and carry out a distribution policy for each publication -- whether by gift, exchange, or sale.
7. Establish and maintain an inventory control system for all publications stocks.

Proper execution of responsibilities listed above will require as Chief of the Unit a person with a well-rounded background in editorial or publications work and a knowledge of Government rules and regulations governing printing and publications. In addition, it would be desirable that he have experience in the library field and in biomedical science writing.

The Publications Management Unit will be performing a staff service for the Director and for the operating divisions of the Library. Its work will be closely related to that now being performed by the Public Information Officer, since public information to the scientific community and to the lay public are essentially two interrelated aspects of a single broad program.

It is, therefore, recommended that an Information and Publications Office be established as a major staff arm of the Director, and that it contain three units - Public Information, Publications Management, and Visual Aids and Exhibits.

The Visual Aids and Exhibits function would be a logical expansion of the very excellent work now being done on exhibits by a single exhibits technician.

B. Training

The position of leadership enjoyed by NLM in the field of biomedical library science imposes a responsibility and an obligation to impart its knowledges and skills to others. This responsibility has grown dramatically as a result of the national fame of MEDLARS and the need to train personnel for the operation of decentralized MEDLARS centers. It will become of even greater urgency with the passage of the Library Assistance Act of 1965.

NLM is not now organized to provide coordinated, library-wide, training programs for personnel from other libraries or for the in-service training of its own employees. This does not mean that there has not been some worthwhile training activity carried on. Senior personnel in the Indexing and Searching Units of BSD particularly have made important contributions in this field. However, the training staff of BSD which was expected to organize and mount a training program for Index and Search Personnel has not yet become operational. Regardless of reasons for the failure, this group cannot constitute a solution to the NLM's training needs for two reasons. Training, especially in subject areas that are rapidly changing, cannot be divorced from operations; and this staff is limited to training within BSD and cannot assume responsibility for Library-wide training.

It is recommended (1) that the training staff in BSD be eliminated; (2) that a staff position of Training Officer, reporting to the Director, be established to plan, organize, direct, and evaluate all NLM intramural training activity; and (3) that operating personnel be relied upon to do the actual training.

This proposed Training Officer should be a person who can recognize training needs, stimulate training activity, and organize, schedule and coordinate courses. He might need one professional assistant and secretarial staff, but he should use and not duplicate existing NLM resources and competencies in the subject matter areas.

The term "intramural" as used in the above recommendation is intended to encompass all training done at NLM whether the trainee is an NLM employee, the recipient of an extramural training grant, a prospective employee of a regional MEDLARS center, or an employee of any other medical library, domestic or foreign.

C. Management Services

The traditional management services now provided under the leadership of the Executive Officer do not require any major reorganization. There are, however, two areas that need strengthening and there are certain functions which could better be performed elsewhere.

The Office of the Executive Officer is currently carrying the responsibility for arranging tours of the Library for its numerous visitors, both general public and visiting library officials and scientists. This task should be transferred to the Public Information Unit. The miscellaneous publications distribution functions previously carried on by the Administrative Librarian, and more recently by the Staff Assistant to the Executive Officer, should be transferred to the proposed Publications Management Unit.

An important management service not now provided at NLM is the management analysis function. It is recognized that the Computer Systems Analysis group in the present Data Processing Division has strong competence in procedural studies, but its work is directed almost entirely toward computer applications. The possibility of transferring this group to the Executive Officer was considered carefully but rejected on the grounds that the most

important procedural developments at NLM will continue at least for several years to be in the area of automation and computer applications. It is recommended, however, that one person be added to the staff of the Executive Officer to be concerned with over-all organizational management and procedural needs of the Library. This person should also devote a major amount of his time to the development and effective use of work load statistics as tools for program planning, supervisory control, and budget planning. NLM operations are primarily of a production nature, ideally suited to this kind of analysis. The Management Analyst on the staff of the Executive Officer should be able to cooperate with, make use of, and not duplicate the procedural analysis resources of the Data Processing Division. This will require a real spirit of cooperation by all concerned, but with the right attitude it should work effectively.

The other area of management staff support which needs strengthening is the area now served by the Office Services group. As the name indicates, this is now restricted to the usual housekeeping services, property control and mail, messenger, and reproduction services. There are a number of functions, such as records management, travel, transportation, and supervision and scheduling of conference rooms, which could benefit by being brought together and better organized. It is, therefore, recommended that the services now provided by the Office Services group be expanded to include a broader range of administrative services, that the title be changed

to Administrative Services, and that it be headed by an Administrative Services Officer, with broad training and experience in the subject areas covered.

D. Planning

Planning for the future role of NLM is of transcending importance and represents a tremendous challenge. It must eventually concern itself not only with just how well the Library is meeting its current responsibilities but with what are the real, but unexpressed, information needs of the health scientists and practitioners and how can medical libraries redirect their activities to meet these needs.

It is customary in many organizations to establish a separate planning staff of "Program Officer" to carry responsibility for program planning and evaluation. There is always a possibility, however, that such an office can become divorced from the reality of operating problems and ascend to its own ivory tower. In its present stage of development and with its current degree of internal coherence, NLM should not attempt to establish a separate planning and evaluation function.

It is recommended, however, that an NLM planning committee be established to consist of the Deputy Director, the Associate Director for Extramural Programs, and the Associate Director for Intramural Programs. The Chief of the Information Systems Division, because of his broad responsibilities for systems evaluation and development, may frequently contribute

staff support to this committee or may actually be called on to meet with it on an ad hoc basis. If subsequent experience indicates a need for additional staff support in over-all planning and evaluation, it is suggested that it be met by adding a staff assistant to the office of the Deputy Director.

The planning committee should concern itself only with Library-wide planning. Planning within his own scope of responsibility is, and must be, an integral part of every line supervisor's responsibility from the lowest unit head to the Director of the Library.

VI. GUIDING PRINCIPLES

All of the organizational discussions and recommendations presented in this Report have been based on certain concepts and assumptions reached as a result of a careful analysis of the functions and responsibilities of the Library. It is believed that the concepts are of fundamental importance and that any future organizational changes or major staffing decisions should be examined in the light of their conformity with these principles. These principles, or concepts, can be briefly summarized as follows:

A. NLM should continue to be organized by function - that is, its major organizational groupings should represent related functions, not subject matter content or professions.

B. Subject matter or language specialization, when needed, should be achieved at a unit or section level.

C. The establishment of offices or special assistant positions with responsibilities which overlap major divisional groupings should be avoided as far as possible in order to (a) reduce the number of officials reporting to the Director, (b) avoid duplication of effort, and (c) strengthen the position and responsibilities of division chiefs.

D. The few staff services which must be Library-wide should be clearly identified and established as such.

These are not just theoretical statements of organizational philosophy; it is firmly believed that they represent practical considerations which must guide

the division of work and assignment of responsibilities within the Library if it is to achieve its future mission effectively and efficiently.

VII. SUMMARY OF RECOMMENDATIONS

	Page
1. Transfer the bibliographic reference function, exclusive of the "Ready Reference" service, from RSD to BSD and join it with the present Search Unit to form a Reference Section	9
2. Adopt the title "Circulation Services Division" as more descriptive of the remaining RSD functions.	11
3. When selected monograph literature is brought into MEDLARS, assign the indexing function to the BSD Index Unit.	12
4. Establish the Drug Information Program as a Section in BSD, but carry out the indexing responsibility by supplementing the resources of the present Index Unit, not by establishing a separate indexing unit.	14, 16
5. Test and evaluate new concepts in indexing with a view toward changing the system if future developments so indicate.	18
6. Assign responsibility for Regional MEDLARS Centers to a separate section in the Information Systems Division.	19
7. Organize an Information Systems Division with three sections: Research, Development and Evaluation; Computer Operation; and Regional MEDLARS Centers	20
8. Continue the History of Medicine Division with no change in function or organization.	21
9. Expand Index staff to provide at least one person for each 8,000 articles to be indexed annually, exclusive of additional personnel needed for depth-indexing of drug related literature.	25
10. Discontinue review by BSD of journals not to be indexed.	26
11. Assign each journal on a continuing basis to an indexer or group of indexers; have the secretary route the journals accordingly; have completed work submitted through the revisers; and have production statistics kept by each indexer or reviewer and summarized by secretary.	26, 27

12. Discontinue duplicate recording by BSD of serial receipts. 28

13. Establish a three-divisional structure within the Extramural Program area to consist of a Research and Training Grants Division, a Library Resources Division, and a Publications Support Division. 32

14. Establish a position of Associate Director for Intramural Programs to assist in long range planning and to direct and coordinate the work of the five intramural divisions. 33

15. Abolish the position of Science Communications Specialist. 35

16. Abolish the position of Special Assistant in charge of MeSH and transfer MeSH function to an expanded BSD. 35

17. Establish a Publications Management Unit with functions as listed. 36

18. Establish an Information and Publications Office consisting of three units: Public Information, Publications Management, and Visual Aid and Exhibits. 38

19. Eliminate the Training Staff in BSD; establish a Training Officer position reporting to the Director to plan, organize and direct NLM intramural training activity; and rely on operating personnel to do the actual training. 39

20. Transfer responsibility for arranging tours and visits from the Office of the Executive Officer to the Public Information Unit. 40

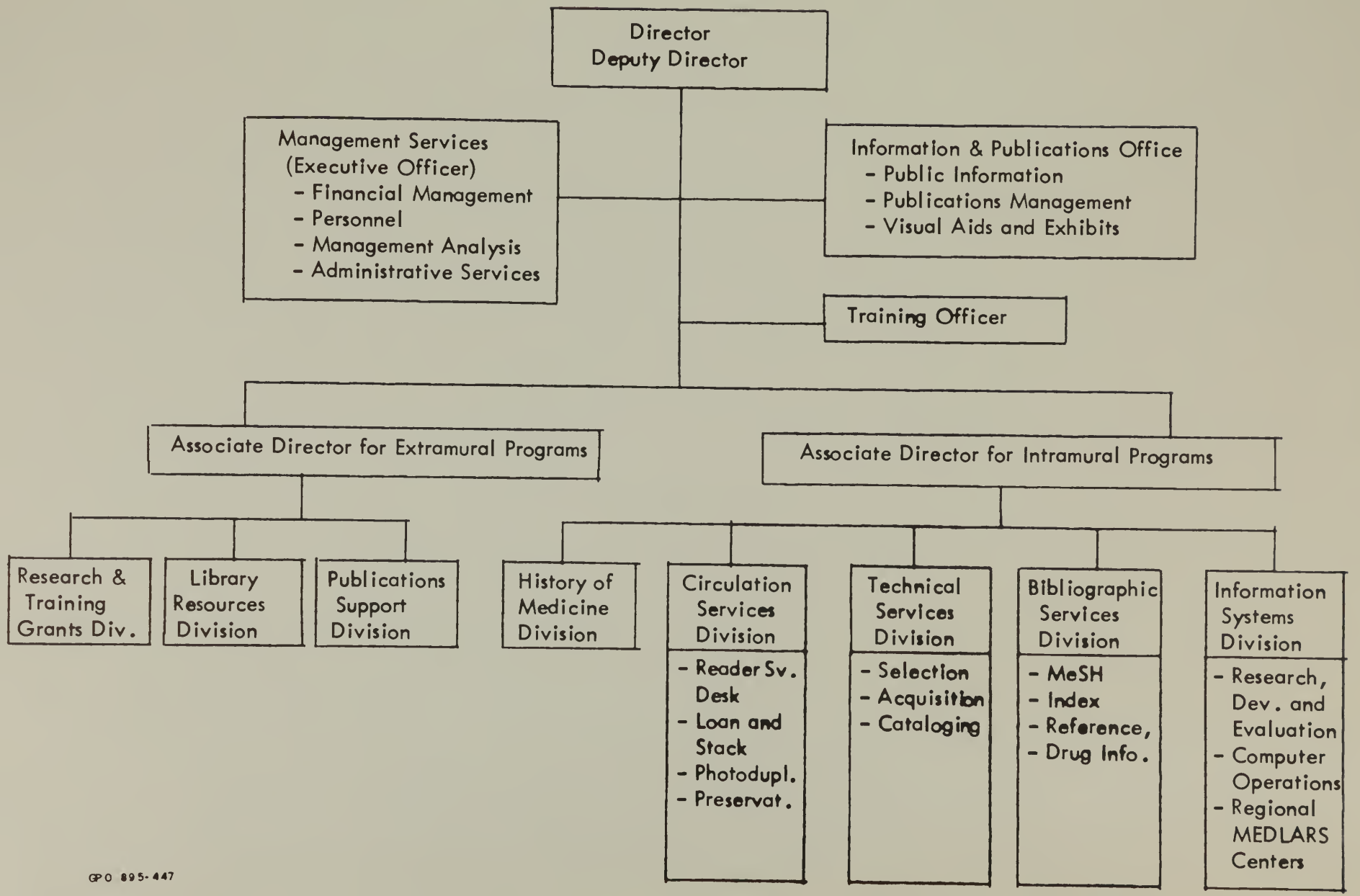
21. Transfer miscellaneous publications distributions functions now in the Office of the Executive Officer to the Publications Management Unit. 40

22. Add to the staff of the Executive Officer one Management Analyst position, with duties as indicated. 41

23. Expand the functions of the Office Services group; change the title to Administrative Services Unit; and establish a position of Administrative Services Officer to head this Unit. 42

24. Establish no separate Planning Office, but rather use the Deputy Director and the two Associate Directors as a permanent planning committee for Library-wide planning. 42

NATIONAL LIBRARY OF MEDICINE - PROPOSED ORGANIZATION



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